Asia. Of this bird the eggs were first obtained, we believe, by Fedtchenko, and have ever since ranked as great rarities, and collectors will therefore be interested in finding specimens included among those collected last year and mentioned by Prof. Newton. R. L.

## NOTES.

The Council of the Royal Society have invited Dr. Wilhelm Pfeffer, professor of botany in the University of Leipzig, and foreign member of the Royal Society, to deliver the Croonian Lecture on March 17. The subject of the lecture is to be "On the Nature and Significance of Functional Metabolism (*Betriebsstoffwechsels*) in the Plant." The lecture will be delivered in German. Prof. Pfeffer is well known among botanists for his two volumes on "Pflanzenphysiologie," published in 1881 from Tübingen, and the second edition of which was issued last year; while his views on the function of chlorophyll, and its absorption-spectrum, are familiar to workers on the physiology of plant-life.

More than 100 foreign zoologists have now consented to be members of the "Committee of Patronage" of the Fourth International Congress of Zoology, and a large number of them have expressed the hope that they will be able to be present at the meeting in August next. Among these we may mention the names of Prof. Häckel, of Jena; Prof. Graff, of Graz; Prof. Grassi, of Rome; M. Blanchard, of Paris; Baron Jules de Guerne, who has been associated with the Prince of Monaco; Dr. Jentink, of Leyden, who was President of the Third Congress; Dr. Dollo, of Brussels; and Prof. Collett, of Christiania. From the United States it is hoped there will be a somewhat large contingent; Profs. Osborn and Scott, Prof. E. B. Wilson, and Mr. Watasé, of Chicago, all hope to be able to come.

The sixth "James Forrest" Lecture of the Institution of Civil Engineers will be delivered on Thursday, March 17, at eight o'clock. Prof. W. Boyd Dawkins, F.R.S., the lecturer, takes for his subject "Geology in relation to Engineering."

The Mayor of Bradford presided at a meeting, held on Monday, for the purpose of considering a proposal to invite the British Association to Bradford for the year 1900. It was unanimously decided to send an invitation to the Association for the year 1900, and an executive committee was appointed to make arrangements if the invitation should be accepted.

It is expected that some of the observers of the recent total eclipse of the sun will give a preliminary account of their observations at the meeting of the Royal Astronomical Society to-morrow.

The Municipal Council of Paris have inserted in the budget for this year the sum of ten thousand francs, for the laboratory of photography and radiography at the Salpêtrière.

The following grants have recently been made by the Trustees of the Elizabeth Thompson Science Fund:—250 dollars to Prof. Gustav Hüfner (Tübingen), for the investigation of hæmin and hæmatine; 288 dollars to Prof. Carlo Bonacini (Modena), for researches in colour photography; 250 dollars to Prof. John Milne, to aid in a seismic survey of the world.

The Zürich correspondent of the *Times* states that the observatory on Mont Blanc, which was constructed by M. Joseph Vallot some seven years ago, is to be transferred to another site. The present structure is built on a small rocky plateau, which extends for a short distance from the Rochers des Bosses, but its position is no longer favourable for scientific observations. The construction of the building has served as a barrier against which the snow piles itself in ever-increasing masses, causing both trouble and expense to the observatory staff. The whole erection is to be transferred, piece by piece, on the backs of workmen from the Rochers des Bosses to a rocky point at the same altitude, where the ground will first be levelled by blasting, and, in spite of the difficulties of climate and transport attending these operations, it is hoped that the whole transfer will be finished in the course of one summer season.

At the meeting of the Entomological Society of London on March 2, a discussion took place on the reported introduction of the San José scale, *Aspidiotus perniciosus*, into Great Britain. Mr. R. Newstead, the only British entomologist who is now specially occupied with Coccidæ, stated that during the past nine years he had never once met with this species among the numerous scale-insects taken in this country and forwarded to him for identification. It was impossible even for an expert to distinguish it, without careful microscopical preparation and examination, from among the thirty or more described species of *Aspidiotus*, and any attempt to identify it on imported fruit by naked-eye observation, or with a hand-lens, was therefore quite impracticable. The risk of its distribution by importation on fruit was small; there was, however, much more likelihood of its introduction on plants or trees. At the same time he saw no reason to suppose that it would be more injurious in this country than the common *Mytilaspis pomorum*; in America the San José scale had several, sometimes as many as five, generations in the year, but in this climate it would probably conform with the habits of all other scale-insects at present investigated and become single-brooded. Mr. Newstead's conclusions were generally agreed with by the Fellows present.

According to the *Bulletin de la Société Francaise de Physique*, M. Crémieu has devised an ingenious means of producing elliptic sound-vibrations in air. By the interference of the longitudinal vibrations of two organ-pipes, placed at right angles, and vibrating under the influence of two diapasons with the proper difference of phase, an elliptic motion was set up at the intersection of the tubes, and its existence was made evident by means of delicate quartz fibres which followed all the movements of the air.

M. A. Leduc, in a paper read before the Société Française de Physique, criticises the well-known law of mixture of gases, according to which the pressure of a mixture is the sum of the pressures of its constituents at the same volume and temperature. This law is only true for perfect gases, and is then equivalent to the statement that the volume of the mixture equals the sum of the volumes of its constituents at the same pressure and temperature. From experiments on several gas-mixtures, M. Leduc considers that the second form of the law is rigorously applicable to certain mixtures of real gases, and is, in general, in closer approximation with experiment than the first.

In the *Annales du Bureau Central Meteorologique*, M. Moureaux gives an account of the different comparisons he has made between the magnetic instruments of the Parc Saint Maur Observatory and those of the observatories at Kew, Uccle (Brussels) and Pavlovsk (St. Petersbourg). The comparison observations made at Kew have already been described by Mr. Chree in a communication to the Royal Society. The declination at Pavlovsk was found to be 1′·3 higher than the French standard, the horizontal force 0·00013 lower, and the dip 0′·8 lower. At Uccle the declination was 1′·5 lower, the horizontal force 0·00002 lower, and the dip was not compared. In the account of the Kew comparisons an arithmetical error occurs which makes the horizontal force difference 0·00011 when it ought to be 0·00012.

IN connection with recent measurements of the temperature of the air at high altitudes, Signor Luigi de Marchi, writing in the *Rendiconto del R. Istituto Lombardo*, discusses the validity of Mendeléef's and Herschel's laws connecting temperature with altitude, and draws conclusions which may be briefly summed up thus:—(*a*) Recent measurements of temperature of the higher strata of the atmosphere can be represented by a formula of the type of Mendeléef's, viz. $t + C = (T + C)p/P$, where, however, C increases with the altitude; (*b*) for altitudes below about 4500 metres the formula agrees with observation when C is taken as a linear function of the altitude, but for greater altitudes, up to 13,000 metres, the supposition that C is a linear function of the pressure gives the best results, the formula then reducing, like Herschel's, to an equation of the second degree in $p$; (*c*) for altitudes of a few thousand metres Mendeléef's formula gives sufficiently approximate results when C is taken to be constant; (*d*) the validity of the proposed formula, if substantiated by further observations, would confirm the hypothesis that the temperature of a stratum at any given altitude is determined principally by the equilibrium between the thermal radiations which it receives from the ground, and which it emits into the sky, when the assumed law of radiation is that of Newton or of Stefan. The latter law in the strata hitherto reached would lead to a formula less reconcilable with the data of observation than the former.

ONE of the difficulties which water-engineers have to face is the unpleasant odour which sometimes characterises surface waters stored in open reservoirs. Such odours are frequently supposed to be due to the decomposition of organic matter in the water, but, although such may be the case, in many instances they have been found to be attributable to the growth of microscopical organisms, and quite a long list has now been furnished of vegetable growths which impart disagreeable tastes and smells to water. Messrs. Jackson and Ellms have just published a memoir describing their investigations upon one of the *Cyanophyceæ* or blue-green Algæ which, when growing in water, impregnates the latter with a most unpleasant mouldy grassy smell. Pure cultures of *Anabæna circinalis*, an important offender in this particular, were obtained and numerous experiments were carried out. As in the case of other microscopical water-organisms, the odour emitted during growth was found to be due to the presence of certain compounds of the nature of essential oils which make their appearance at a particular stage of growth. The investigation was also extended to an examination of these Anabæna during decay, a most offensive odour being given off during decomposition. This the writers think is probably due to the high percentages of nitrogen which these growths contain. The gas given off during decomposition was analysed and was found to contain a large percentage of hydrogen, and a considerable proportion of sulphur compounds. Analyses of the decayed gelatinous material resulting from the decomposition of Anabæna revealed the presence of a large amount of sulphur and a considerable amount of phosphorus. The subject is of such importance in connection with the storage of surface waters, that the closer study of the chemical composition of these organisms and of the organic and mineral contents of the waters which the various genera infest, is well worthy of attention; for by extending our knowledge in this manner, we should be better able to judge beforehand of the likelihood of particular waters becoming subject to these unpleasant changes on storage. The above memoir is to be found in vol. x. of the *Technology Quarterly*, Massachusetts.

THE receipt by the University of Pennsylvania of a collection of mammalian fossils from the tundra at the back of Point Barrow, Alaska, has induced Mr. S. N. Rhoads to put together the available information on the living and extinct species of North American *Boves*. Mr. Rhoads refers one of the Alaskan Bison-heads to an unnamed species which he proposes to call *Bison alaskensis* (*Proc. Ac. N.S. Phil.*, 1897, p. 490). He has likewise taken this opportunity to examine the question of the so-called "Woodland Bison" of the Peace-River district of Athabasca. It appears that an adult male specimen of this little-known animal has recently been obtained by the Geological Museum of Ottawa. Mr. Rhoads describes this example from information sent to him by Prof. J. Macoun, and refers it to a new sub-species, *Bison bison athabascæ*, separating it from the typical form on account of its "great size, darkness of colour, and the characters of the horns and horn-cores."

AN interesting article on the wild cattle of Chartley, Staffordshire, is contributed to *Nature Notes* by Mr. J. R. B. Masefield. This herd of wild white cattle is of great antiquity; but whether the present animals are directly descended from some one of the ancient native species, such as *Bos primigenius*, *Bos longifrons*, &c., or whether they are descendants of domestic cattle introduced by the Romans and run wild, is still an undecided question. The home of these cattle is situated on high ground some 300 feet above sea-level, and was enclosed about the year 1200, and forms a portion of Chartley Park, some five miles from Uttoxeter, the nearest town. The extent of this wild tract of table-land is about 1000 acres, covered with coarse grass, rushes, stunted bilberries, and heather, and patches of luxuriant bracken fern, with a few clumps of old weather-beaten Scotch firs and birch, which afford some shade from the hot summer sun. Among the other denizens of this wild primeval tract are herds of red and fallow deer and multitudes of rabbits, (with no doubt a few of their natural enemies, the stoat and voles—both the common vole and red bank vole), moles, long-tailed field mice, shrews, weasels, and adders. The theory that the Chartley breed of wild cattle is indigenous appears to be supported by their general habits at the present day. When alarmed they start off at full gallop for a short distance, then turn and face their foe in a semicircle, with the bulls in front, the cows behind, and the younger animals and calves still further in the rear. If closer approached, these tactics, which are clearly those of wild animals, are repeated, or the adversary is charged and attacked. Again, they conceal their young in fern or long rushes, and the cows, when calves are born, become exceedingly fierce and dangerous, especially if an intruder should get between a cow and her calf. Mr. Masefield points out that a fine herd of white cattle, very strongly resembling the Chartley breed, are to be found at Lamphey Court, near Tenby, in South Wales; they are said to belong to an old Welsh breed, but in colour and general appearance it is difficult to distinguish them from the Chartley animals.

M. P. VUILLOT has completed a map of the lake districts of Timbuktu on the scale of 1/100,000, which contains a number of topographical discoveries in this little-known region. In presenting the map to the Paris Geographical Society, M. Vuillot adds an interesting note on the hydrography of the area, and on its productiveness, which has been published in the Society's *Comptes rendus*.

PROF. THEOBALD FISCHER contributes a short paper to *Petermann's Mittheilungen* on the "moraine-amphitheatre" of the Lake of Garda. The form of the moraine deposits on the inner or Italian side of the Alps differs markedly in type from that on the outer or German side. In the former type, of which the Lake of Garda affords an excellent example, the deposits are laid down in concentric ramparts which turn their convex side to the plains; while in the latter we find the familiar expanded fan shape at the mouths of the valleys. Dr. Fischer avails himself of the very excellent maps and models furnished by the Italian Service.

THE first two numbers of the new volume of the *Mittheilungen* of the Vienna Geographical Society are devoted to a memoir on he Hallstätter See, by Dr. Lorenz, Ritter von Liburnau, which extends to over 200 octavo pages. The form and position of the lake are discussed, chemical analyses are given of its waters and of the waters of the inflowing streams, and there are elaborate investigations into the distribution of temperature at different depths and at different seasons, into currents, transparency and colour of water, and the various forms of life. Dr. Lorenz had the assistance of a large number of colleagues in making his observations, and was fortunate in having a steam launch placed at his disposal free of cost.

*Petermann's Mittheilungen* contains an account of a recent expedition into the interior of Dutch East Borneo by Dr. A. W. Nieuwenhuis. The region between the upper basins of the Kapuas and the Kutei or Mahakam rivers was not visited by the Dutch expedition of 1894, owing to the supposed hostility of the natives; but by judicious treatment and selection of native companions, Dr. Nieuwenhuis has succeeded in exploring a considerable area. A stay of eight months was made at a station on the Bloeoe, a small right-bank tributary of the Mahakam, giving opportunity for detailed topographical and geological surveys. Extensive collections were made, which have reached Buitenzorg in safety.

IN descending the Niger, the Hourst Expedition found the navigation of that river impeded by rapids from Ansongo to below Boussa. As this was during the season of high water, M. le Lieut. de Chevigne was detailed in May 1897 to make a further reconnaissance when the river was at its lowest. The results of his observations are published in the *Comptes rendus* of the Paris Geographical Society, and are described as of special importance on account of a French station having been recently established at Say. The Niger is to be considered as navigable from Timbuktu to Ansongo, but only during high water; below Ansongo, rocky shallows and rapids render navigation difficult at all seasons, and dangerous, if not impossible, for nine months in the year.

IN the *Bulletin* of the Imperial Society of Naturalists of Moscow, No. 2 for 1897, is a lengthy and important paper (in German) by C. Sokolowa, on the growth of root-hairs and rhizoids. He appears to have come to the conclusion that neither the growth of the cell-wall nor the currents in the protoplasm are directly dependent on the cell-nucleus, although the position of the nucleus appears to a certain extent to determine the direction of the currents. N. Malischeff contributes some remarks on the nerve-endings in the œsophagus and stomach of birds. The remaining papers are in Russian.

DR. F. VON KERNER publishes a short account of some recent geological work on the coast regions of Dalmatia in the *Verhandlungen* of the Austrian Geological Survey. The peninsula of Ostrica, the island of Zlarin, and a number of the neighbouring rocky islets were surveyed, disclosing some features of geological and geographical interest. The islands together form part of the submerged lower course of the river Kerka.

AT the recent Ithaca meeting, the Association of American Anatomists adopted the report of the majority of the Committee on Anatomical Nomenclature, and ordered it to be published and distributed as soon as practicable, accompanied by the objections of the minority of the Committee, and comments thereon by the Secretary of the Committee. Of the neural terms recommended, more than 100 were identical with those adopted in 1895 by the Anatomische Gesellschaft.

WITH reference to our note on M. J. Deniker' papers on the characteristics of the inhabitants of the various districts o Europe (p. 351-2), the author writes to correct an error which unfortunately crept into his paper. In our note, p. 352, line 14, the race "(β) Blond, mesocephalic, very short," should be ascribed to Saxony-Poland instead of Sweden.

THE additions to the Zoological Society's Gardens during the past week include a Masked Paradoxure (*Paradoxure larratus*), a Large Indian Civet (*Viverra zibetha*) from Western Szechuen, China, presented by Mr. Julius Newmann; three Punjaub Wild Sheep (*Ovis vignei*, ♂ ♀ ♀) from Southern Persia, deposited; a Common Seal (*Shoca vitulina*) from Holland, an Indian River Snake (*Tropidonotus piscator*) from India, purchased; a Leopard (*Felis pardus*), born in the Gardens.

## *OUR ASTRONOMICAL COLUMN.*

OCCULTATION OF ANTARES.—The occultation of a star of the first magnitude is of rare occurrence, more especially when the moon is at such a favourable age as in the case of the occultation of Antares (α Scorpii) magnitude 1·1, on March 13, when the moon is in the last quarter. The times of disappearance at the bright edge and reappearance at the dark edge, as given in the *Nautical Almanac*, for Greenwich are 14h. 38m. 0s., and 15h. 49m. 0s; and the angles at which these respective phenomena take place are 111° and 305°, measured from the vertex. The occultation of this beautiful red star is a most interesting observation, especially at the favourable phase of the moon, which should render the doubling of Antares easily visible. It was during an occultation that Burg discovered the celebrated blue companion in 1819.

NAUTICAL ALMANAC, 1901.—The *Nautical Almanac* for the year 1901 has just been issued. It is arranged in a similar way to those now familiar to us, and from it we learn the details of the total eclipse of the sun which takes place in that year on May 17. The path of the shadow passes over Sumatra, Borneo, Celebes, and the southern part of New Guinea; the eclipse will also be visible in Australia, but only as a large partial one, whilst in Europe and America no trace of it can be observed. This eclipse is remarkable for being one in which the duration of totality is nearly the longest possible, the maximum obscuration of the sun lasting about six and a half minutes.

We notice also that in accordance with the decision of the Paris Conference on Fundamental Stars, held in May 1896, the constants of precession, nutation, aberration and solar parallax, as set forth at that meeting, have been adopted. The new value for the solar parallax is, therefore, 8″·80 instead of 8″·848, and this is probably correct to within 0″·02.

Part I. of the *Almanac* is issued separately, as of late years, and contains such information as is essential to navigators.

VARIABLE STAR U PEGASI.—In a recent issue of NATURE, p. 352, we noted Mr. O. C. Wendell's observations of the short-period variable, made at the Harvard College Observatory, and the results of which were issued by Prof. Pickering in Circular No. 23. In the *Astronomical Journal*, No. 426, Mr. Chandler brings data together to show that the light curve is, as was originally laid down, of single period, and not analogous to that of β Lyræ, with a small difference of 0·15 mag. between the primary and secondary minima. He also points out that the polarising photometer failed to make manifest the secondary minimum of the star Z Herculis, a phenomenon involving a difference of nearly 0·5 mag., or three times the amount in question.

In Circular No. 25 (on polarising photometers), Prof. Pickering points out that the objections to the first form of photometer have been remedied, and now the emergent pencils of the images compared coincide, and a surprising degree of accuracy may be obtained in the measures, which is illustrated by numbers from actual observations. He also gives the individual results derived from Mr. Wendell's observations, and these show that the largest value of the secondary minimum is 0·05 mag. less than the smallest value of the primary minimum. Besides this he shows that if the minima be assumed to be equal, the residuals at first minimum have a mean value of +0·064, and at the second the mean value is -0·070. He concludes that "the probability, therefore, that the two minima are really equal and that these deviations are due to accidental error is extremely small; and it is very singular that if these deviations are due to systematic error, that it has one value at principal minimum and another at secondary minimum."